CARL PETER THUNBERG.

AN EARLY INVESTIGATOR OF CAPE BOTANY.

Part V*

(With Plate VIII).

By Mia C. Karsten.

THUNBERG'S LITERARY CONTRIBUTIONS TOWARDS THE KNOWLEDGE OF CAPE BOTANY.

Back at Uppsala from his 9 years journey, Thunberg plunged into the study and arrangement of his extensive collections with the utmost assiduity. We have already recorded that in 1785 his complete collections of *naturalia* were presented to Uppsala University.

Certainly Thunberg had made the most of his 3 years residence at the Cape, and his botanical exploration of that region could hardly have been more fruitful. The thoroughness of his research cannot be better illustrated than by the following statement quoted from MacOwan's paper[211]: "The painstaking completeness of Thunberg's research is significantly shown by the fact that not a few remarkable plants found and described by him a century ago escaped the researches of both Ecklon and Zeyher, who beat over the ground for thirty years, and of Drège, who completes the lynx-eyed trio of collectors."

The material he brought home or already sent to Europe during his stay in that southernmost corner of Africa greatly exceeded his collections of Cingalese, Javanese and Japanese plants. In this connection it is by no means surprising that the greater part of his publications are entirely or at least partially devoted to Cape plants, and when we notice the long list of his botanical contributions as given in Juel's "Plantae Thunbergianae," we cannot but have the greatest admiration for Thunberg's scientific ability and extraordinary energy, his literary inheritance being amazing.

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* The concluding part of the series, of which parts I, II and III were published in the Journal, Vol. V (1939), pp. 1, 87, 105, and part IV in Vol. XIII 1947 p 127.

[211] Peter MacOwan, "Personalia of Botanical Collectors at the Cape," Transact. S. Afr. Phil. Soc., Vol. IV, 1887. New edition (Verduyn den Boer) 1929, p. 36.

His extensive collections of Cape plants comprise more than 3,000 species, over 1,000 of which not having been discovered before. Moreover THUNBERG is the author of no less than 74 genera nova, all of them described in his "Genera nova plantarum," though a number of these have been withdrawn later on; 48 genera have been established on Cape plants, of which 28 are still valid to-day.

A summary of THUNBERG's genera of Cape plants may be of interest. The valid names are printed in italics. To most of the genera the type species have been added under the names as given by THUNBERG, followed by the valid names in modern botany, if the former names have not been retained.

Acharia 1794. (Passifl.). *A. tragodes*, Thunb. !

Aitonia 1781=*Nymania*, Lindb. (Sapind.). A monotypic genus. Aitonia capensis, Thunb.=*Nymania capensis*, (Thunb.) Lindb., now classified with the Meliaceae.

Alectra 1784=*Melasma*, Berg. 1767. (Scroph.). Alectra capensis, Thunb.=*Melasma capense*, (Thunb.) Hiern. !

Augea 1794. (Zygophyll.). *A. capensis*, Thunb. !

Boscia 1794=*Toddalia*, Juss. 1789. (Rutaceae). B. undulata, Thunb.=*Toddalia lanceolata*, Lam. !

Calodendrum 1782 (later spelled Calodendr*on*). (Rutaceae). *C. capense*, (L.f.) Thunb. !

Caroxylon 1782=*Salsola*, L. (Chenopod.). C. salsola, Thunb.=*Salsola aphylla*, L. !

Cavanilla, *Thunb.* 1794 (non Gmel. 1791)=*Pyrenacantha*, Wight 1831. (Rosac.). C. scandens, Thunb.=*Pyrenacantha scandens*, (Thunb.) Planch. !

Chamira 1782. (Crucif.). *C. cornuta*, Thunb. !

Chenolea 1781. (Chenopod.). *C. diffusa*, Thunb. !

Choristea 1800=*Didelta*, L'Hérit. 1785. (Comp.). Ch. carnosa, (L.f.) Thunb.=*Didelta carnosum*, (L.f.) Ait. ! Ch. spinosa, (L.f.) Thunb. =*Didelta spinosum*, (L.f.) Ait. !

Cussonia 1780. (Aral.). *C. spicata*, Thunb. ! *C. thyrsiflora*, Thunb. !

Dahlia, *Thunb.* 1792 (non Cav. 1791 !)=*Trichocladus*, Pers. 1807. (Hamamelid.). D. crinita, Thunb.=*Trichocladus crinitus*, (Thunb.) Pers. !

Denekia, Thunb. 1800. (Comp.). *D. capensis*, Thunb. !

Doria 1800=*Senecio*, L. partially (several species having been separated from this genus and placed under the genera *Cineraria* and *Othonna*). (Comp.).

Ehrharta 1779. (Gramineae). *E. capensis*, Thunb. !

Fabricia, *Thunb.* 1779 (non Adans. 1763)=*Hypoxis*, L. partially (several species having been separated from this genus and placed under the genera *Janthe* and *Forbesia*). (Amaryll.).

Falckia 1781. (Convolv.). Convolvulus Falckia, Thunb. 1794=*Falckia repens*, Thunb. 1781.

Galaxia 1782. (Irid.). *G. ovata,* Thunb. et Andrews !

Hallia 1799. (Legum.). Many species.

Hydnora 1775, a monotypic genus. (Hydnoraceae). *H. africana*, Thunb.

Hypocalyptus 1800. (Legum.). *H. canescens*, Thunb. ! Further including several species of *Podalyria*, i.a. H. calyptratus, Thunb.=*Podalyria calyptrata*, (Thunb.) Willd., the "keurtjie."—H. capensis, (L.) Thunb.=*Virgilia capensis*, (L.) Lam., the "keurboom."

Lapeirousia 1800=*Peyrousea*, DC. 1837. (Comp.). L. calycina, (L.f.) Thunb.=*Peyrousea calycina*, (L.f.) DC. !

Laurophyllus 1792=*Botryceras*, Willd. 1811. (Anacard.). L. capensis, Thunb.=*Botryceras laurinum*, Willd.

Lebeckia 1800. (Legum.). A few species have been separated and included in the genera *Eremosparton* (doubtful spec.), *Wiborgia*, *Aspalathus*.

Massonia, Thunb. apud L.f. 1781. (Liliac.).

Mertensia, Thunb. apud Roth 1807=*Champia,* Desv. 1808. (Algae). M. lumbricalis, Thunb.=Ulva lumbricalis, L.=*Champia lumbricalis*, (L.) Lamour !

Montinia 1777. (Saxifr.). *M. caryophyllacea*, Thunb. !

Oedmannia 1800=*Rafnia*, Thunb. 1800. (Legum.). O. lancea, Thunb. =*Rafnia lancea*, (Thunb.) DC. !

Olinia 1799. (Oliniaceae). *O. cymosa*, (L.f.) Thunb. !

Papiria 1777.=*Gethyllis*, L. (Amaryll.) ; *i.a.* P. ciliaris, Thunb.= *Gethyllis ciliaris*, Thunb. 1781 ; P. lanceolata, Thunb.=Gethyllis lanceolata, Thunb. 1781=*Apodolirion lanceolatum*, (Thunb.) Benth. et Hook. ; P. spiralis, Thunb.=*Gethyllis spiralis*, Thunb. 1781 ; P. villosa, Thunb.=*Gethyllis villosa*, Thunb. 1781.

Pentzia 1800. (Comp.). *P. crenata*, Thunb. !

Phelypaea, *Thunb.* 1784 (non L.)=*Cytinus*, L. (Rafflesiaceae). Ph. sanguinea, Thunb.=*Cytinus dioicus*, Juss. !

Rafnia 1800. (Legum.). Many species with THUNBERG as authority.

Retzia 1776. (Solanac.). *R. capensis*, Thunb. !

Roemeria (genus spurium) 1798. (Anacard.). R. argentea, Thunb.= *Anaphrenium argenteum*, (Thunb.) E. Mey. !

Rosenia, Thunb. 1800. (Comp.) *R. glandulosa*, Thunb. !

Rothmannia 1776=*Gardenia*, Ellis 1761. (Rubiac.). R. capensis, Thunb.=*Gardenia Rothmannia*, Thunb. 1780.

Sanseviera 1794 (also spelled Sansevieria). (Liliac.). S. aethiopica, Thunb.=*S. zeylanica*, (Jacq.) Willd.

Sarcophyllus 1799=*Aspalathus*, L. (Legum.). S. carnosus, Thunb.= *Aspalathus sarcodes*, Vog. (Walp. according to HARVEY).

Stobaea 1800=*Berkheya*, Ehrh. 1788. (Comp.). Many species.

Toxicodendrum 1796. (later spelled Toxicodendron). (Euphorb.). *T. capense*, Thunb. !

Vahlia 1782. (Saxifr.). *V. capensis*, (L.f.) Thunb. !

Wiborgia 1800. (Legum.). In THUNBERG's herbarium 3 species, all of them with THUNBERG as authority.

Willdenowia 1790. (Also spelled Wildenowia). (Restion.). A few species, one of them having later been included in the gen. *Cannamois*.

Witsenia 1782 (or Witsena). (Irid.). A few species, including one species of *Nivenia*. Witsena maura, Thunb.=*Witsenia maura*, (L.) Thunb.!

Wurmbea 1781. (Liliac.). *W. capensis*, Thunb. !

Zuccagnia 1798=*Dipcadi*, Medic. 1790. (Liliac.). Z. viridis, (L.) Thunb. =*Dipcadi filamentosum*, Medic.

Proceeding to his publications on Cape plants, his "Flora Capensis" may be introduced as his best known work, and being the first more extensive treatment of the Cape vegetation, it certainly may be praised as a meritorious piece of work, though we know that THUNBERG was not able to complete the work himself. On the other hand THUNBERG has fixed his vast store of botanical observations in a great number of monographs in the form of academical dissertations and this undoubtedly is the reason that his preparatory work for the "Flora Capensis" was held up. It was not, however, the first Cape flora that made its bow to the botanical world, for this honour is due to CAROLUS LINNAEUS' "Flora Capensis" (1759)[212], a nineteen pages booklet containing a short enumeration of the animals, a very brief account of the climate and the cultivated plants which have been introduced from Europe and Asia, some interesting notes on the collectors HERMANN, OLDENLAND, HARTOG, followed by a list of no less than 503 species of Cape plants, belonging to 174 genera. It is a mere catalogue of plants, no descriptions being given. Nearly all Proteaceae are included in the genus *Leucadendron*, and there are only two species of *Protea*, viz. *P. argentea* (*Leucadendron argenteum*, R. Br. !) and *P. fusca*. As to the other plants we counted *inter alia* 11 species of *Crassula* and no less than 40 *Mesembryanthemums*, but we found the orchids missing. This florula appeared as an academical dissertation under the name of CAROLUS HENR. WÄNNMAN, but must be ascribed to LINNAEUS. It is P. J. BERGIUS' "Descriptiones Plantarum ex Capite Bonae Spei" (1767)[213] that may be regarded as a first serious attempt to produce a flora of the Cape. This book numbering 368 pages, contains 5 plates depicting 10 species of Cape plants. These illustrations are not exactly true to life, the artist having evidently drawn the figures from dried specimens. The Latin descriptions BERGIUS gives of the plants which he received from MICHAEL GRUBB and which originally were AUGE'S collecting, are very full and adequate. But also this work on the Cape flora is far from being complete. So we found the important genus *Mesembryanthemum* missing and the few species of *Protea* known to BERGIUS included in the gen. *Leucadendron*. However, in view of the very superficial knowledge of the Cape vegetation at the time this work was written—THUNBERG'S botanical exploration of the country was far more extensive than that of any earlier traveller—we may pay tribute to Prof. BERGIUS for this publication that surely deserves our appreciation as the first *descriptive* flora of the Cape.

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[212] C. H. WANNMAN, *Flora Capensis* (Sub Praesidio D. D. CAROLI LINNAEI).—Amoenitates Academicae V, pp. 353-370.—Upsaliae, 1759.

As to the compilation of THUNBERG'S "Flora Capensis" which proceeded very slowly, the following information may be quoted from JUEL.

THUNBERG originally intended to publish a work on the Cape flora that would be illustrated just like his "Flora Iaponica." To that end he made an arrangement with a Berlin publisher. However, he found it suitable after all to confine himself for the time being to a short summary of the work. So his "Prodromus Plantarum Capensium" was born, which appeared in two volumes in the years 1794 and 1800 and comprised the whole system, though with only very short diagnoses, so that it is little more than a descriptive catalogue of the briefest kind. A photograph of the title-page of Vol. I, Upsaliae, 1794 is here reproduced (*vide* Plate VIII). In this "Prodromus" the diagnoses of the species of the monotypic genera are missing, these having been included in the diagnoses of the genera which had been published earlier in his "Novorum generum characteres essentiales," but unfortunately without quoting the pages. Nearly the whole contents of the "Prodromus" one may find unchanged in the "Flora Capensis" which came out later. But in the "Flora Capensis" the genera *Toxicodendron* and *Capraria* are missing, and so are all species of *Borbonia* as described in the "Prodromus."

The preparation of the "Flora Capensis" took a much longer time than that of his "Flora Iaponica" (1784), the collected material not only being much larger, but also the Cape vegetation being characterized by a great number of very large and difficult genera.

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[213] P. J. BERGIUS, *Descriptiones Plantarum ex Capite Bonae Spei*, cum differentiis specificis, nominibus trivialibus, et synonymis auctorum justis. Secundum systema sexuale. Cum Tabulis aeneis.—Stockholmiae, 1767.

The Berlin edition of the Cape flora never appeared, but the work was printed at Uppsala in a more modest form without plates. The first fascicle, of which the title-page is reproduced herewith (*vide* Plate VIII) came out in 1807, the second in 1811, the third in 1813; with this last part the first volume with the first four classes was concluded. For some reason this edition was not continued, for the second volume was printed at Copenhagen (Hafniae) in two fascicles comprising the 5th and 6th classes, which came out in 1818 and 1820 respectively. This Copenhagen edition was badly edited with many misprints and this edition too was not continued. At that time THUNBERG was already an old man and he probably felt that this task exceeded his strength, so he left the work to the botanist Dr. J. A. SCHULTES at Stuttgart, who ultimately edited it from the author's manuscript in 1823.

THUNBERG published monographs of numerous genera of Cape plants in various periodicals at home and abroad or as separate dissertations. During the time that he completed his " Flora Iaponica," an undertaking that he achieved within 5 years—the work was published in 1784—he produced various publications on Cape plants, including monographs of some larger genera like *Protea*, *Oxalis*, *Iris* (=*Morea*, etc., see below), *Ixia*, *Gladiolus*.

No less than 293 academic dissertations (Dissertationes academicae Vpsaliae habitae sub praesidio C. P. THUNBERG, edited by C. H. PERSOON), several of them dealing with Cape genera and many of them bearing on the title-page the names of his pupils, as whose *orationes doctae* they seem to have appeared, have been published in two volumes at Göttingen in 1799 and 1800. But there is some reason to assume that THUNBERG himself had the authorship of many of the papers published under his direction[214].

In the Transactions of that old and worthy institution, the Kungl. Vetenskapsakademien (Royal Academy of Science) at Stockholm we find a series of papers written by THUNBERG on Cape plants and animals.

We have already mentioned his " Beskrifning på en ganska besynnerlig och obekant svamp, *Hydnora africana*, ifrån Goda hupps udden " (Kongl. Vetenskaps Academiens Handlingar, Vol. 36, tab. II, 1775[215]), containing a description of that curious parasitic plant which is introduced by him as

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[214] *Vide* PETER MACOWAN, " Personalia of Botanical Collectors at the Cape," Transact. S. Afr. Phil. Soc., Vol. IV, 1887. New edition (VERDUYN DEN BOER) 1929.

[215] See also C. P. Thunberg III, Journal of S. Afr. Botany, Vol. V, Part IV, Oct. 1939, pp. 150-151; the title of this publication which we examined in the Academy's library, slightly differs from that given in JUEL's " Plantae Thunbergianae," for in the latter it reads: " Beskrifning . . . . ifrån Goda *Hoppets* udde."

" a most peculiar and unknown fungus." From this paper the following may be quoted here : " But of all that I have so far had the opportunity to see and discover, nothing has appeared to me more strange than the Fungus whose description I now have the honour of submitting. So strange is its structure that many people would certainly doubt the existence of such a plant on the face of the earth."[216] SVEDELIUS in his Thunberg biography[217] adds to this that the plant referred to appeared to THUNBERG neither a true fungus nor yet classifiable with the flowering plants. It resembled both the Orobanche and the fungi. Later on, however, the *Hydnora* was found to be a phanerogamous plant allied to the Rafflesiaceae and Aristolochiaceae. Just like the latter it has a decidedly protogynous, entomophilous flower where the pollinating insects are imprisoned some little time while the stamens ripen their pollen.

As to its habitat the article reveals that THUNBERG discovered this plant in the " Båckefälts bergen " (Bokkeveld mountains).

Some additional notes on *Hydnora africana*, Thunb. were published by THUNBERG in the K. Vet. Acad. Handlingar of 1777 and 1808.

Another of THUNBERG'S papers published in the Academy's Transactions deals with that very poisonous Euphorbiacea *Toxicodendron capense*, Thunb. The article is entitled " Giftträdet på Goda hopps udden, Toxicodendrum, kalladt och beskrifvet " (A Poison-tree of the Cape of Good Hope, named and described (as) Toxicodendrum), Kongl. Vetensk. Acad. Handlingar, Vol. XVII, tab. VI, 1796. The following quotation from this old paper provides interesting reading[218] :

" During my 3 years journeys from South Africa's extremity into the interior, the Dutch colonists often talked about the poison by means of of which wolves, hyaenas and other beasts can be killed just like it is done with nux-vomica, if it is mixed with meat of some carrion. My efforts to discover the fruit which possessed that property, gave me the conviction that in some places the capsules of some large Euphorbia are used, whose entire genus is always acknowledged to be poisonous. However, at the same time I received another fruit that much resembled a Euphorbia, but somewhat differed from it. This fruit was hard, opened gradually at the edges and contained three cells, making itself known as allied to Triacocca and consequently having its poisonous nature."

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[216] Original Swedish text : " Men bland allt det, som jag hittills haft tillfälle att se och upptäcka, har dock ingenting förekommit mig mera undransvärt, än den Svamp, vars beskrivning jag nu har äran överlämna. Den är till sin sammansättning så besynnerlig, att mången skulle säkerligen tvivla, att en dylik växt gives på jordklotet."

[217] NILS SVEDELIUS, " Carl Peter Thunberg 1743-1828," Svenska Linné-Sällskapets Årsskrift, Argang XXVII (1944), p. 41. *ibid.*, " C. P. Thunberg on his Bicentenary," in the American journal Isis, Vol. XXXV, Part 2, No. 100, Spring, 1944, pp. 130-131.

[218] Original Swedish text : " Under mine tre-årige Resor uti de inre Landskap af det Södra Africas hörn, taltes ej sällan utaf Hollandske Nybyggare om et Förgift, hvarmed Wargar, Hyaena och andre Raf-djur, likasom med Räf-kakor, kunde dödas, då det inblandades uti köttet af något Luder.

Mine bemödanden at uptäcka en frukt af denna egenskap förvissade mig, at uti nagre orter nyttjades Fröhusen utaf någon stor Euphorbia, hvilkets hela slägte altid varit ärkändt för giftigt. Men tilleka ärhöll jag en annan frukt, som väl mycket liknade Euphorbia, men tycktes skilja sig något derifrån.

Denna Frukt var hård, öppnade sig småningom i kanterne och innehöll trenne rum, gifvande tillkänna sin slägtskap med Triacocca och i följe deras sin giftige natur."

Further we came across a description of a new species of *Gladiolus*, viz. " Gladiolus Sparrmanni, ett nytt Species, beskrifvet " (K. Vet. Acad. Handl. för 1814. Tab. IX). According to the late Dr. N. E. Brown this species belongs to the genus *Freesia* and it was consequently renamed *Freesia Sparrmanii*, (Thunb.) N. E. Br.

Dr. Felix Bryk of the Entomological Department of the State Museum for Natural History (Naturhistoriska Riksmuseum) at Stockholm kindly called our attention to the little known fact that Thunberg like his master Carolus Linnaeus was a great zoologist too, but that this part of Thunberg's investigations has been rather stepmotherly treated so far. We will therefore quote three of Thunberg's zoological papers which may be of interest to our S. African readers. In the K. Vet. Acad. Handlingar of 1784 an article was published bearing the title : " Anmärkningar om några foglar af *Loxiae* slägte på Goda hopps udden" (Notes on some birds of the genus *Loxia* from the Cape of Good Hope). In this paper Thunberg tells us that *Loxia caffra* is the most curious of all because of its long tail and that this characteristic causes the colonists to call the same " langstaartvogel." Further it is recorded that this bird is found far away from Capetown, about 200 miles inland to the Northwest, near Zeekoe river and as far as Swartkops river.

The other two publications are " Beskrifning på tvenne nya insektslägten, Gnatocerus och Taumacera ifrån Goda hopps udden" (Description of two new genera of insects, Gnatocerus and Taumacera from the Cape of Good Hope), K. Vet. Acad. Handl., 1814) and " Beskrifning och teckning på ett nytt species, Hyaena brunnea" [Description and picture of a new species (of the gen. Hyaena), H. brunnea], published in the K. Vet. Acad. Handlingar of 1820.

The catalogue Thunberg made of the collections he presented to the University of Uppsala and which was gradually enlarged with his new acquisitions, provided material for 61 dissertations which were defended under his direction and published under the heading " Museum naturalium Academiae Upsaliensis." The new acquisitions of his herbarium from 1797-1819 were listed in a long series of "Appendices." Needless to say, of the many species of plants dealt with in this serial publication, a certain number originated from the Cape.

We have already dealt at great length with THUNBERG'S "Resa" (Travels), a 4 vols. itinerary which surely may be classed among the most noteworthy works he left. We know that the original Swedish edition was published in 1788-93, and that this was speedily followed up by German, English and French translations. The wealth of botanical records collected in this work and, not least, the many notes about the habitat of the plants mentioned or described, does impart it a certain scientific value also from a plant-geographical point of view.

Finally we may put forward as THUNBERG'S co-operators in the scientific arrangement of his collections of plants his fellow-countrymen LINNAEUS the younger[219] ; O. SWARTZ, who described some of his orchids, Pteridophyta and Bryophyta ; and E. ACHARIUS, who described several of his new species of Algae and probably identified his entire collection of these lower plants.

Annotated list of publications in chronological order by C. P. Thunberg on Cape plants or partially dealing with Cape botany.

Cycas caffra, nova Palmae species descripta. Nova Acta Regiae Societatis scientiarum Upsaliensis, Vol. II, tab. V (1775).

Cycas caffra, Thunb.=*Encephalartos caffer*, (Thunb.) Miq.

Beskrifning på en ganska besynnerlig och obekant svamp, *Hydnora africana*, ifrån Goda hupps udden. Kongl. Vetenskaps Academiens Handlingar, Stockholm, Vol. 36, tab. II (1775). (Transl.: Description of a most peculiar and unknown fungus, *Hydn. africana*, from the Cape of Good Hope).

Rothmannia, et nytt Örte-genus ; funnet och beskrifvit. Ibidem, Vol. 37, tab. II (1776).—(Transl. : R., a new genus of plants ; found and described).

(Rothmannia, Thunb.=*Gardenia*, Ellis).

Retzia capensis, et nytt Ört-slag, funnit och beskrifvit. Physiographiska Sälskapets Handlingar, Stockholm, Vol. I : 1, tab. I, fig. 2 (1776). This Society is established at Lund, its transactions being often quoted as "Acta Lundensia."—(Transl. : R. capensis, a new genus of plants, found and described).

Montinia och Papiria, tvänne nya Örtslag fran Goda Hopps Udden, beskrifne. Ibidem, Vol. I : 2 (1777). The 2nd part of this vol. had left the press towards the end of 1777.—(Transl. : M. and P., two new genera of plants described, from the Cape of Good Hope).

(Papiria, Thunb.=*Gethyllis*, L.).

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[219] *Vide* second part of this work (Journal of S. Afr. Botany, Vol. V, Part II, July 1939, pp. 102-3).

Beskrifning, på hvad Sätt, som Aloës Kåda uti Africa tilredes. Ibid., Vol. I: 2 (1777).—(Transl.: Description of the way in which Aloe-resin is prepared in Africa).

Anmärkningar vid Hydnora africana. K. Vet. Acad. Handl., Stockholm, Vol. 38, tab. IV (1777).—(Transl.: Observations on H. afr.).

Observatio LXVIII sistens Crassulae generis XXVIII Novas species in Capite bonae spei detectas et descriptas. Nova Acta phys.-med. Acad. Caesar. Leop.-Carol. naturae curiosorum, Norimbergae, Vol. VI (1778).

Et til sit slägte nytt och tilförene obekant Gräs, kalladt Ehrharta. K. Vet. Acad. Handl., Stockholm, Vol. 40 (1779).—(Transl.: A new grass of its genus and hitherto unknown, named E.).

Cussonia, novum plantae genus e Promontorio Bonae Spei Africes descriptum. N. Act. R. Soc. Scient. Upsal., Vol. III, tab. XII, XIII (1780).

Dissertatio botanica de Gardenia. Upsaliae. Tab. I, II (1780).

Reprints: in Acta medicorum suecicorum, Vol. I (1783), p. 131, tab. XI, XII; in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, tab. I, II.

Dissertatio botanica de Protea. Upsaliae. Tab. I-V (1781). (Incl. species of *Leucadendron. Leucospermum, Mimetes, Aulax, Serruria,* etc.).

Reprints: in Acta medic. suec., Vol. I (1783), p. 1, tab. I-V; in Diss. acad. Vpsåliae, etc., Vol. II, Gottingae 1800, without tab.

Oxalis. (Dissertatio botanica de Oxalide). Upsaliae, Tab. I, II (1781).

Reprints: In Acta medic. suec., Vol. I (1783), p. 69, tab. VI, VII; in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Nova genera plantarum. Part. I. (Diss.). Upsaliae. Tab. (1781).

Reprints: in Acta medic. suec., Vol. I (1783), p. 207, tab. XVI; in Diss. acad. Vpsaliae, etc., Vol. I, Gottingae 1799, tab. I.

Aitonia capensis. Physiogr. Sälsk. Handl., Stockholm, Vol. I: 3, tab. III (1781). (From the protocol of the Society of May 2, 1781 it is recorded that this part came from the press in that year).

Beschrijving van twee nieuwe Soorten van Palmboomachtige Gewassen, uit Japan en van de Kaap der Goede Hope; met eenige Aanmerkingen omtrent de Bloemen van de Varens en dergelijke planten. Verhandelingen Hollandsche Maatschappij der Wetenschappen, Haarlem, Vol. XX: 2 (1782).—(Transl.: Description of two new Species of Palm-treelike Plants, from Japan and the Cape of Good Hope; with some Observations on the Flowers of the Ferns and similar plants).

See also Carl Peter Thunberg III (Travels), Journal of S. Afr. Botany, Vol. V, Part III, Oct., 1939, p. 126, footnote 99.

Iris. (Diss. botanica de Iride). Upsaliae. Tab. I, II (1782). (=Species of *Morea*, *Homeria*, etc.).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Nova genera plantarum. Part. II. (Diss.). Upsaliae. Tab. (1782).

Reprints : in Act. medic. suec., Vol. I (1783), p. 234, tab. XVII ; in Diss. acad. Vpsaliae, etc., Vol. I, Gottingae 1799, tab. II.

Descriptio generis Dilatris dicti. Schrift. Berlin. Gesellsch. naturf. Freunde, Vol. IV (1783).

Ixia. (Dissertatio botanica de Ixia). Upsaliae. Tab. (1-2) (1783). (Incl. species of *Geissorhiza*, *Sparaxis*, *Romulea*, *Lapeyrousia*, *Tritonia*, etc.).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Nova genera plantarum, Part. III. (Diss.). Upsaliae. Tab. (1783).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. I, Gottingae 1799, tab. III.

Nova genera plantarum, Part. IV. (Diss.). Upsaliae. Tab. (1784).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. I, Gottingae 1799, tab. IV.

Nova genera plantarum. Part. V. (Diss.). Upsaliae. Tab. (1784).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. I, Gottingae 1799, tab. V.

Gladiolus. (Dissertatio botanica de Gladiolo). Upsaliae. Tab. I, II (1784). (Incl. species of *Lapeyrousia*, *Romulea*, *Tritonia*, *Watsonia*, *Babiana*, *Hesperantha*, etc.).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Dissertatio botanico-medica de Aloë. Upsaliae. (1785).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800.

Dissertatio botanica de Erica. Upsaliae. Tab. I-VI. (1785).

Reprints : in USTERI, Delectus opusculorum botanicorum, Vol. II,, Argentorati 1793, p. 1, without tab. ; in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab. ; Editio altera cur. R. A. SALISBURY, Featherstone 1800, without the original plates, with one pl. by SALISB.

Anmärkningar och beskrifning på Albucae Örteslägte. K. Vet. Acad. Nya Handl., Stockholm, Vol. VII, tab. II, fig. 1 (1786).—(Transl. : Notes and description of the botanical genus (literally : genus of plants) of *Albuca*).

Ficus genus. (Diss.). Upsaliae. Tab. (1786).

Reprints : in USTERI, Delect. opusc. botan., Vol. I, Argent. 1790, p. 125, tab. V ; in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Beskrifning på et nytt Slägte uti Ört-riket, kalladt Falckia. Physiogr. Sälsk. Handl., Stockholm, Vol. I : 4, tab. IV, fig. 3 (1786).—(Transl. : Description of a new genus of the vegetable kingdom, called Falckia).

Dissertatio botanica de Moraea. Upsaliae. Tab. I, II (1787). (Incl. species of *Aristea, Bobartia, Homeria, Hexaglottis,* etc.).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Restio. (Diss.). Upsaliae. Tab. (1788). (Incl. species of *Thamnochortus, Elegia, Dovea,* etc.).

Reprints : in Usteri, Delect. opusc. botan., Vol. I, Argent. 1790, p. 35, tab. II ; in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Resa uti Europa, Africa, Asia, förrättad åren 1770-1779. Upsala. 1 : a Del. 1788 ; 2:a Del. 1789 ; 3:e Del. 1791 ; 4:e Del. 1793.—(Transl. : Travels in Europe, Africa, Asia, performed in the years 1770-1779).

Translations in German, English and French : Reise durch einen Theil von Europa, Afrika und Asien, hauptsächlich in Japan, in den Jahren 1770-1779. Aus dem Schwed. von Grosskurd. Berlin I, II, 1792-94.

Reisen in Afrika und Asien, vorzüglich in Japan, während der Jahre 1772 : 1779 auszugsweise übersetzt von K. Sprengel. Berlin 1792.

Travels in Europe, Africa and Asia. I-IV. London, 1794-95.

Voyages de C. P. Thunberg au Japon, par le Cap de Bonne-Espérance, des îles de la Sonde, etc. Trad. par L. Langlès et revus quant à la partie d'histoire naturelle par J. B. Lamarck. I-IV. Paris 1796.

Voyage en Afrique et en Asie, principalement au Japon, pendant les années 1770-1779, servant de suite au voyage de Sparrman. Paris 1794.

Beskrifning på Wildenowia, et synnerligt och nytt Gräs-Slag. K. Vet. Acad. Nya Handl., Stockholm, Vol. XI, tab. II (1790).—(Transl. : Description of Wildenowia, a peculiar and new genus of grasses). (Incl. sp. of *Cannamois*).

Descriptiones Mesembryanthemorum quorundam in Capitis bonae spei Africes interioris regionibus anno MDCCLXXIV detectorum. N. Act. phys.-med. Caesar. Leop.-Carol. naturae curios., Norimbergae, Vol. VIII (1791).

Museum naturalium Academiae Upsaliensis. Part. IX, X. Donationis Thunbergianae continuat. (Diss.). Upsaliae (1791). (Comprises the Classes I-IV).

Beskrivelse over en ny og tilforn ubekiendt Plante-Slaegt Dahlia crinita kaldet. Skrivter av Naturhistorie-Selskabet, Köbenhavn, Vol. II : 1, tab. 4 (1792).—(Transl. : Description of a new and hitherto unknown genus of plants, named Dahlia crinita).

(Dahlia crinita, Thunb.=*Trichocladus crinitus*, (Thunb.) Pers.)

Genera nova plantarum. Part VI, VII. (Diss.). Upsaliae (1792).

Reprint : in Diss. acad. Vpsaliae, etc., Vol. I, Gottingae 1799.

Museum naturalium Academiae Upsaliensis. Part XI-XIII. (Diss.). Upsaliae (1792). (Classes V-IX).

Afhandling og Beskrivelse over nogle tilforn ubekiendte Arter af Rohria. Skrivt. Naturh. Selsk. Köbenhavn, Vol. III: 1, tab. VI-XIII (1793).—(Transl.: Treatise and description of some hitherto unknown species of Rohria).

(=species of *Berkheya, Cullumia, Stephanocoma*).

Museum naturalium Academiae Upsaliensis. Part XIV. (Diss.). Upsaliae (1793). (Classis X).

Prodromus Plantarum Capensium, quas, in Promontorio Bonae Spei Africes, annis 1772-1775, collegit. Pars prior. Upsaliae, Tab. (1-3) (1794). (Classes I-X).

Beskrifning på Örteslägtet Cyanella. K. Vet. Acad. Nya Handl., Stockholm, Vol. XV, tab. VII (1794).—(Transl.: Description of the plant genus *Cyanella*).

Dissertatio botanica de Hermannia. Upsaliae. Tab. (1794). (Incl. species of *Mahernia*).

Reprint: in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, without tab.

Museum naturalium Academiae Upsaliensis. Part XV-XVIII. (Diss.). Upsaliae (1794). (Classes XI-XV.).

Giftträdet på Goda hopps udden, Toxicodendrum kalladt och beskrifvet. K. Vet. Acad. Handl., Stockholm, Vol. XVII, tab. VI (1796).—(Transl.: A Poison-tree of the Cape of Good Hope, named and described (as) Toxicodendrum).

Museum naturalium Academiae Upsaliensis, Part. XIX, XX. (Diss.). Upsaliae. (1796). (Classes XVI-XVIII).

Dissertatio botanica de Diosma. Upsaliae (1797).

(Incl. species of *Barosma, Agathosma, Coleonema, Macrostylis, Adenandra, Empleurum* and two Bruniaceae: *Audouinia* and *Linconia*).

Reprint: in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800.

Dissertatio botanica de Drosera. (Upsaliae 1797).

(Incl. *Roridula*).

Reprint: in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800.

Museum naturalium Academiae Upsaliensis. Part XXI, XXII. (Diss.). Upsaliae (1797). (Classes XIX, XXIV).

Museum naturalium Academiae Upsaliensis. Appendic. V. (Diss.). Upsaliae (1797). (Classes I-XIX).

Monographie af Urteslaegten Gorteria. Skrivt. Naturh. Selsk. Köbenhavn, Vol. IV: 2, tab. 1-6 (1798).—(Transl.: Monograph of the plant genus G.).

(Incl. species of *Gazania* (many), *Didelta, Cullumia, Hirpicium*).

Dissertatio botanica de Hydrocotyle. Upsaliae. Tab. (1798).
Reprint : in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800, tab. III.
Genera nova plantarum. Part. VIII. (Diss.) Upsaliae (1798).
Reprint : In Diss. acad. Vpsaliae, etc., Vol. I, Gottingae 1799.
Genera nova plantarum. Part. IX. (Diss.). Upsaliae (1798).
Museum naturalium Academiae Upsaliensis. Append. VII. (Diss.). Upsaliae (1798). (Classes I-XXIV).

Genera duo nova plantarum capensium. Schrader's Journal für Botanik, Göttingen, Vol. I, 1799 : 2.
Beskrivelse over sex Arter af Slaegten Rohria. Skrivt. Naturh. Selsk., Köbenhavn, Vol. I : 1, tab. VI-XI (1799).—(Transl. : Description of six species of the genus R.).
(All species belonging to the genera *Cullumia* and *Berkheya*).
Arctotis. (Diss.). Upsaliae (1799).
(Incl. species of *Ursinia* (many !), *Cryptostemma*, *Arctotheca*, *Haplocarpha*, *Didelta*, *Venidium*, *Chrysanthemum*).
Reprint : in Diss. acad. Vpsaliae, etc., Vol. II, Gottingae 1800.

Dissertationes academicae Vpsaliae habitae sub praesidio C. P. Thunberg. Gottingae, Vol. I, tab. I-V (1799), edited by C. H. Persoon.
Ibidem, Vol. II, tab. I-III (1800).
Prodromus Plantarum Capensium, etc. Pars posterior. Upsaliae (1800). (Classes XI-XXIV).
Oedmannia, et nytt Ört-slägte. K. Vet. Acad. Nya Handl., Stockholm, Vol. XXI, tab. IV (1800).—(Transl.: Oedmannia, a new genus of plants).
(=*Rafnia*, Thunb.).
Genera nova plantarum. Part. X-XII. (Diss.). Upsaliae (1800).
Museum naturalium Academiae Upsaliensis. Append. VIII. (Diss.). Upsaliae (1800).
Nova genera plantarum. Part. XIII-XVI. (Diss.). Upsaliae (1801).
Dissertatio botanica qua Aspalathus, etc. publico examini subjicitur. Pars I, II. (De Aspalatho). Upsaliae (1802).
(Incl. species of *Wiborgia* and *Argyrolobium*).
Dissertatio botanica de Blaeria. Upsaliae (1802).
(Incl. species of *Erica*).
Novae Species Plantarum Capensium, examinatae et descriptae. Hoffmann's Phytographische Blätter, Göttingen, Vol. I (1803).
Dissertatio de Antholyza. Upsaliae (1803).
(Incl. species of *Babiana* and *Watsonia*).

Descriptiones nonnullarum Specierum plantarum, in Australis Africae Promontorio bonae spei sponte crescentium, quae antea vel non, vel incomplete, Botanicis innotuerunt. Weber und Mohr,

Archiv für systematische Naturgeschichte, Leipzig, Vol. I: 1, tab. I (1804).

Description of such Species of Chironia as grow wild at the Cape of Good Hope. Trans. Linn. Soc., London, Vol. VII, tab. XII (1804).

Dissertatio de Phylica. Upsaliae (1804).

(Incl. species of two Bruniaceae : *Brunia* and *Staavia*).

Dissertatio de Brunia. Upsaliae (1804).

(Incl. species of *Berzelia* (many), *Staavia, Tittmannia, Nebelia*).

Plantae contortae in Promontorio bonae Spei Africes olim collectae jamquae descriptae. Nov. Act. Acad. scient. imper. Petropol., Vol. XIV, tab. IX (1805).

Hermas, plantae genus, descriptionibus, animadversionibus et iconibus illustratum. Ibid., Vol. XIV, tab. XI, XII (1805).

Celastri plures species, in Africae promontorio maxime australi collectae descriptaeque. Römer's Archiv für Botanik, Leipzig, Vol. III: 3, tab. III (1805).

(Incl. species of *Euclea, Elaeodendron, Pterocelastrus, Dovyalis*).

Proteae, plantae generis, species novae, descriptae. Nov. Act. Acad. scient. imper. Petropol., Vol. XV, tab. III-VI (1806).

(Incl. species of *Leucadendron, Isopogon, Leucospermum, Serruria*).

E plantis Asperifoliis species nonnullae, vel omnino non, vel minus cognitae, in Promontorio bonae spei collectae et descriptae. Schrader's Neues Journal für die Botanik, Erfurt, Vol. I: 3 (1806).

Thesium. (Diss.). Upsaliae (1806).

(Incl. species of *Colpoon* and *Thesidium*).

Museum naturalium Academiae Upsaliensis. Append. IX-XII. (Diss.). Upsaliae (1806).

Flora Capensis, sistens Plantas Promontorii Bonae Spei Africes, secundum Systema Sexuale emendatum redactas ad Classes, Ordines, Genera et Species, cum Differentiis specificis, Synonymis et Descriptionibus. Vol. I fasc. 1. Upsaliae (1807). (Contains the Classes I and II).

Reprint : See below.

Penaea illustrata. Magazin Gesellschaft naturf. Freunde, Berlin, Vol. I tab. III (1807).

(Incl. species of *Brachysiphon, Glischrocolla, Sarcocolla, Endonema, Geissoloma* (Geissolomaceae), and 1 Euphorbiacea : *Cluytia*).

Museum naturalium Academiae Upsaliensis. Append. XIV. (Diss.). Upsaliae (1807). (Classes XXIV, I-XIV).

Tillägg til Beskrifningen af Hydnora Africana. K. Vet. Acad. Nya Handl., Stockholm, Vol. XXIX, tab. VII (1808).—(Transl.: Additional notes on Hydnora Africana).

An illustration of the Species of Lycium which grow wild at the Cape of Good Hope. Trans. Linn. Soc., London, Vol. IX, tab. XIV-XVII (1808).

Museum naturalium Academiae Upsaliensis. Append. XVI. (Diss.). Upsaliae (1808). (Classes VI-XIX).

Galii species capenses, illustratae. Mémoires Acad. impér. sciences St. Pétersbourg, Vol. I, tab. VII-IX (1809).

Museum naturalium Academiae Upsaliensis. Append. XVII, XVIII. (Diss.). Upsaliae (1809).

Descriptiones Plantarum, e familia Orchidearum, in capite bonae spei Africes collectarum. WEBER'S Beiträge zur Naturkunde, Kiel, Vol. II (1810).

Beskrivelse over 19 Arter af Gladiolus fra Afrikas söndre Odde. Skrivt. Naturh. Selsk. Köbenhavn, Vol. VI, tab. I-IV (1810).—Transl.: Description of 19 species of Gladiolus from the southern Cape of Africa).

(Incl. species of *Lapeyrousia, Babiana, Acidanthera and Watsonia*).

Beskrivelse over de i Africa ved gode Haabs Forbierg fundne nye Arter af Convolvulus. Ibidem, Vol. VI, tab. III, V (1810).—(Transl.: Description of the new species of Convolvulus, found in Africa near the Cape of Good Hope).

(Incl. species of *Falckia* and *Ipomaea*).

Flora Capensis, etc. Vol. I fasc. 2. Upsaliae (1811). (Triandria: Monogynia).

The same edition, with a new title-page only: Hafniae 1820.

Dissertatio botanica de Borbonia. Upsaliae (1811). Tab.

(Incl. species of *Amphithalea* and *Rafnia*).

Poae capenses descriptae. Mémoires Société impériale des naturalistes, Moscou, Vol. III, tab. IV-VII (1812).

(Incl. species of *Eragrostis, Brizopyrum*).

Museum naturalium Academiae Upsaliensis. Append. XIX, XX. (Diss.). Upsaliae (1812).

Flora Capensis, etc. Vol. I fasc. 3. Upsaliae (1813). (Triandria: Digynia—Tetrandria).

The same edition, with a new title-page only: Hafniae 1820.

Campanulae capenses descriptae et depictae. Mémoires Acad. impér. sciences St. Pétersbourg, Vol. IV, tab. V-VII (1813).

(=species of *Wahlenbergia, Roella, Lightfootia, Microcodon, Prismatocarpus*).

Museum naturalium Academiae Upsaliensis. Append. XXI. (Diss.). Upsaliae (1813). (Lichenes).

Gladiolus Sparrmanni, ett nytt Species beskrifvet. K. Vet. Acad. Handl. för 1814. Stockholm. Tab. IX.—(Transl. : G. Sparrmanni, a new species described).

(=*Freesia Sparrmanni* (Thunb.) N. E. Br.).

Museum naturalium Academiae Upsaliensis. Append. XXII. (Diss.). Upsaliae (1814). (Classes XXIV, I-XVIII).

Museum naturalium Academiae Upsaliensis. Append. XXIII. (Diss.). Upsaliae (1816).

Genera plantarum Capensia Samolus, Trachelium, Polemonium, et Roella illustrata. Mémoires Soc. impér. naturalistes Moscou, Vol. V (1817).

(Trachelium=species of *Prismatocarpus* ; Polemonium=species of *Retzia* ; *Roella*, incl. 1 species of *Merciera*).

Rhamni capenses, tres novae species descriptae. Ibidem, Vol. V (1817).

(Incl. 1 species of *Scutia* and 1 species of *Cassine* (Celastr.).

Solana capensia, iconibus et descriptionibus illustrata. Ibidem, Vol. V (1817). Without tab.

Lobeliae capenses, descriptionibus et nonnullae iconibus illustratae. Ibidem, Vol. V (1817). Without tab.

(Incl. species of *Laurentia, Cyphia, Lightfootia, Grammatotheca*).

Graminum capensium species quatuor novae, descriptae. Ibidem, Vol. V (1817).

(=Alopecurus echinatus, Thunb.=*Lasiochloa ciliaris*, Kunth ; Dactylis hispida, Thunb.=*Lasiochloa hispida*, (Thunb.) Kunth or *L. longifolia*, Kunth var. *hispida*, Stapf according to STAPF ; *Ehrharta ramosa*, Thunb. ; the fourth species we could not trace in JUEL's " Plantae Thunbergianae ").

Flora Capensis, etc. Volumen secundi. Fasciculum primum. Hafniae (1818). (Classis V).

(Second edition in 1820, see below).

Descriptiones quatuor Proteae novarum specierum. Mémoires Acad. imp. sciences St. Pétersbourg, Vol. VI, tab. XIV-XVII (1818).

(Protea coarctata, Thunb.=*Petrophila pulchella*, R. Br., an Australian sp. ; Protea laevis, Thunb.=*Leucadendron imbricatum*, R. Br. ; Protea ovata, Thunb.=*P. longiflora*, Lamk. and Protea plumigera, Thunb.=*Serruria simplicifolia*, (Poir.) R. Br.

Museum naturalium Academiae Upsaliensis. Append. XXV. (Diss.). Upsaliae (1818).

In genus Echitis observationes. (Diss.). Upsaliae (1819). Tab.

(Incl. species of the S. Afr. genera *Pachypodium*, *Ceropegia* and *Fockea*).

Museum naturalium Academiae Upsaliensis. Append. XXVI. (Diss.). Upsaliae (1819). (MDCCCIX—misprint for MDCCCXIX).

Flora Capensis, etc. Volumen secundi. Fasciculum secundum. Hafniae (1820). (Classes VI, VII).

Both fascicles together with a new title-page: Volumen secundum. Hafniae 1820.

Flora Capensis, etc. Edidit et praefatus est I. A. SCHULTES. Stuttgardtiae (1823). The only complete edition.

Flora Capensis, etc. Vol. I. Editio nova. Hafniae (1824). This is a reprint, comprising only the two first fascicles, Monandria—Trandria: Monogynia; the first part of the preface has been omitted.

Plantarum capensium species novae. I-III. (Diss.). Upsaliae (1824).

Plantarum capensium species novae. IV.—Genera plantarum nova indica.—Species Orientalis Indiae novae. (Diss.). Upsaliae (1824).

CONCLUSION.

It was not till the third part of this work had been printed, that we were fortunate enough to secure a copy of MACOWAN's delightful paper "Personalia of Botanical Collectors at the Cape" (1887), re-published by VERDUYN DEN BOER in 1929[220]. The many interesting records MACOWAN was able to collect in this essay which originally was his presidential address delivered at the meeting of the South African Philosophical Society, July 1886, combined with his sparkling style, made it fascinating reading from the first to the last page.

As to THUNBERG this publication provides some little known data which we are only too glad to add to our work, since they tell us something about the last part of his long and active life, at the same time elucidating his remarkable personality.

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[220] *Vide* footnote 197. We traced two incorrect dates in the information given about THUNBERG. It was not in March, 1789, that he reached his native land after his long journey, but in March, 1779. And the date of his decease was August 8, 1828 and not 1826. No doubt these are misprints which are likely not to be found in the original edition of MACOWAN's paper.

It seems that life went very smoothly for THUNBERG after he had become a professor of botany in succession to LINNAEUS the younger who died in 1783. He remained at Uppsala teaching daily and supervising the Botanic Garden for many years, " secure in the respect and esteem of the little world at Upsala, and the honour of scientific men everywhere ", as MACOWAN puts it.

THUNBERG must have been somewhat the type of an old-fashioned professor, so often pictured in humoristic papers. Apparently he did not care much for his personal appearance, for MACOWAN narrates that he could not be persuaded to alter in any way the fashion of his attire so as to follow the custom of the day. Nothing could prevent him from delivering his daily lecture even when in his eightieth year, but he would daily drive in from his country house Thunaberg in a very old and creaky carriage " as ancient as the fashion of his clothes " and which the students nicknamed " skällerormen ", which means rattle-trap.

When examining the collection of Linneana in the library of the Royal Zoological Institution " Natura Artis Magistra " at Amsterdam, we stumbled upon a biography of THUNBERG which was hitherto unknown to us. It has been originally published by C. A. AGARDH in the Kongl. Vetenskaps Academiens Handlingar of 1828[221] and must be considered as the most reliable biographical account written of this gifted botanist by a contemporary.

The picture THUNBERG's biographer gives of his character is of the briefest kind, but nevertheless very eulogistic. As THUNBERG was " as artless as nature," his character could be summarized in a few words only, viz. : " The characteristic of his soul was joy, of his outward bearing liveliness, and of his social intercourse friendliness." His biographer continues by saying that there is no need to add anything to this, for there cannot be given a more faithful picture of THUNBERG than by these three substantives.

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[221] Kongl. Vetenskaps Academiens Handlingar för år 1828—Stockholm 1829 (Transactions of the Royal Academy of Science) ; containing THUNBERG's biography and a complete summary of his scientific publications, further some biographical accounts of other distinguished learned men Sweden lost in the year 1828. The biographical account of THUNBERG is written by the elder AGARDH, CARL ADOLF (1785-1859), naturalist, state economist and theologian, first professor of botany at Lund, afterwards bishop at Karlsbad, the famous " father of Algology." AGARDH succeeded THUNBERG in the Swedish Academy of Science and this little biography was his speech in commemoration of his predecessor. Some of these speeches were afterwards translated into German. The little book we consulted was a German translation by Dr. GOTTLIEB MOHNIKE of two of these biographies, viz. : *Die Schwedischen Naturforscher* KARL PETER THUNBERG *und* JOHANN WILHELM DALMAN. Aus den Abhandlungen der Königlichen Akademie der Wissenschaften zu Stockholm. Stralsund, 1831. As an appendix to this work Dr. MOHNIKE has added a translation of some biographical records of THUNBERG, of an extensive report of THUNBERG's funeral, and of two poems, which all had appeared at the time in Swedish papers. In those poems, originally published in the Stockholm magazine " Journalen " of 1828 (No. 197. Upsala), the students from the province of Småland, whose supervisor Prof. THUNBERG had been for rather more than 39 years, lamented the loss that the country, the sciences and they themselves had suffered.

In 1784 THUNBERG married BRIGITTA CHARLOTTA, daughter of the academical administrator RUDA. Their marriage remained childless and in 1813 his wife passed away.

When he had reached the age of 84, he handed over his duty as lecturer to his foster-son Dr. FORSBERG[222], reserving still to himself the curatorship of the Museum. In the summer of 1828, when suffering from a slight feverish attack, he felt his end drawing near. He was placed at his request in a carriage and gently driven over to Uppsala and round all his favourite walks in the Botanic Garden, " taking his farewell view of the objects which had been so dear to him throughout a long life." He died a few days later on August 8, 1828, in his country-house Thunaberg, at the age of eighty-five. His funeral at Uppsala on the 17th of that month was attended by an immense crowd of students and citizens of every degree.

So THUNBERG kept up his incredible energy nearly to the day that his mortal life came to an end.

During his long and active life THUNBERG received much homage. He had been made a Knight of the Royal Order of Vasa in 1785[223], and in 1815 he became a Commander of the same Order, a honour that hitherto had not been conferred by the King on any academical teacher in Sweden.

In his day he was the only scientist with European fame among the professors at the University of Uppsala. He was a member of no less than sixty-six academies and learned societies at home and abroad, of which may be mentioned here : The Kongl. Vetenskaps Academien (R. Acad. of

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[222] CARL PEHR FORSBERG, born at Jönköping, February 1, 1793, and deceased at Carlsborg, April 20, 1832, was a medical doctor and a direct descendant from the second marriage, in 1753, of THUNBERG's mother with the merchant GABRIEL FORSBERG. In this marriage C. P. FORSBERG's father, the merchant HÅKAN LORENZ FORSBERG who consequently became THUNBERG's half-brother, was born. Young C. P. FORSBERG went to Uppsala in 1803 and there he lived in THUNBERG's home and was treated as his son. MACOWAN in his " Personalia of Botan. Coll. at the Cape," 1887 (new edit. 1929, p. 39) has erroneously stated Dr. FORSBERG to be THUNBERG's stepson instead of foster-son.

It was by THUNBERG's last will that Dr. FORSBERG should obtain his extensive insect-collection in order to arrange the specimens, in which work he had not satisfactorily succeeded himself. Having done so, FORSBERG had to deliver the collection to Uppsala University.

FORSBERG's only botanical publication is a 9 pages paper on the Swedish Campanulas (" De Campanulis Suecanis," Upsaliae, typ. Palmblad, 1829).

[223] *Vide* C. P. Thunberg II, Journ. of S. Afr. Botany, Vol. V, Part III, July, 1939, p. 100. From the Author's preface, p. xlviii, of " Voyages de C. P. Thunberg," tome I (Paris, 1796) it may be quoted that THUNBERG was accorded the R. Order of Vasa on November 21, 1785.

Science), the Kongl. Sundhets-Collegium (R. Health Board) of which he was a honorary member, and the Svenska Läkare Sällskapets (Swedish Society of Surgeons), all at Stockholm ; the Royal Norwegian Society of Sciences at Drontheim ; the Societas Linneana, the Societas Medica, the Medico-Botanical Society, the Societas Regia pro Scientia naturali promovenda, the Societas pro Scientia Horticulturae promovenda, all in London ; the Societas Naturae Studiosorum and the Societas Medica at Edinburgh ; the Hollandsche Maatschappij der Wetenschappen (Dutch Society of Sciences) at Haarlem ; the Zeeuwsche Genootschap der Wetenschappen (Zealand Institution of Sciences) at Flushing ; the Societas Scientiarum and the Institut Royale des Sciences, de Littérature et des beaux Arts at Amsterdam ; the Societas Scientiarum Bataviae Indiae Orientalis ; the American Philosophical Society at Philadelphia ; the Academia Imperialis Leopoldino-Carolina Naturae Curiosorum at Bonn ; the Societas Physica at Göttingen, idem at Zürich ; the Societas Phytographica at Göttingen ; the Gesellschaft der Naturforschenden Freunde in Berlin ; the Academie Royale des Sciences de l'Institut de France (correspondent) ; the Société Royale des Sciences at Montpellier ; the Société d'Histoire Naturelle, the Société Médicale, the Société Linnéenne, all in Paris ; the Academia Caesarea Scientiarum at Petersburg ; the Société des Naturalistes at Moscow ; the Academia dè Georgofili at Florence.

On three occasions medals were struck in his honour[224]. In 1818, on his 75th birthday, a gold medal was struck by the " Smålands Nation " (Småland student society) at Uppsala, of which he had been the supervisor for many years. After his death two memorial medals were struck by the Swedish Academy of Science (Kungl. Vetenskapsakademien) at Stockholm. The medal issued in 1832 shows on the one side his portrait and on the other the flower goddess Flora with a *Thunbergia* in her hand and the inscription " Suis late Regina Triumphis " (" She rules far and wide by her Victories "). The other medal struck by the Academy in 1907, gives the effigy of THUNBERG on one side, whilst the other side shows a wreath of *Thunbergia* framing the inscription " E tot floribus sibi famae florem habet ", and underneath " Peregrinator assiduus stud. bot. fines dilatavit ", which reads in English translation : " Out of many flowers he has for himself the flower of glory " (*Thunbergia* !) and " The assiduous traveller has widened the boundaries of botanical study."

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[224] NILS SVEDELIUS, " Carl Peter Thunberg 1743-1828," Svenska Linné-Sällskapets Årsskrift, Argång XXVII (1944), pp. 61-62 ; *ibid.*, " C.P. Thunberg on his Bicentenary," in the American journal Isis, Vol. XXXV, Part 2, No. 100, Spring, 1944, p. 133.

Mention should also be made that THUNBERG received very attractive and most honourable offers from foreign countries. Prof. DAVID VAN ROYEN at Leyden, for instance, tried to persuade him to come to Holland in order to become his successor as a professor of botany and medicine at Leyden's famous University ; and in 1802 the Imperial Russian Academy of Science offered him the Academy's membership and the post of director of the large and well-provided botanical garden at Petersburg. But preferring to serve his own country, THUNBERG declined any offer of work outside Sweden.

We owe to THUNBERG the discovery and introduction into Europe of a very great number of Cape plants, an endless series of the most beautiful and the most curious representatives of a vegetation whose variety can hardly be equalled by any other flora on the face of the earth. THUNBERG himself must have been greatly impressed by the strangeness of the plants he came across on his botanical peregrinations. The following summary of the features of the Cape flora given by him in the Preface of his paper on *Hydnora capensis* (K. Vet. Acad. Handl., 1775) is self-evident : " The herbs are as much unlike all others on the globe as the country itself is separated from the rest of the world."[225].

The importance of THUNBERG'S botanical activities at the Cape has been summarized by MACOWAN[226] in these few words of appreciation : " Nevertheless, as long as in our paradise of flowers there wanders a single botanist, so long will the name of THUNBERG be held in honoured remembrance." And so it is.

His name is commemorated in the African and Asiatic genus *Thunbergia.* This genus, belonging to the Acanthaceae and including some graceful climbers with bright flowers (*T. alata* !), was named after him by his fellow-countryman ANDERS JAHAN RETZIUS, Botanical Demonstrator at Lund (Lunds Fysiografiska Sällskaps Handl., 1780).

In the foregoing pages we have made an earnest attempt to elucidate the prominent part THUNBERG played in the early investigation of Cape botany. In the long and noble procession of learned men who occupied themselves with the exploration and study of the Cape flora, THUNBERG may be regarded as one of the most brilliant figures ; he was a pioneer whose merits can hardly be overrated.

We know that before the last world-war scientific institutions in Sweden and South Africa were planning the erection of a " Thunberg

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[225] Original Swedish text : " Örterne äro så olike alle andre i verlden som sjelfve Landet är skildt från gemenskap med den öfrige världen."

[226] PETER MACOWAN, " Personalia of Botanical Collectors at the Cape," Transact. S. Afr. Phil. Soc., Vol. IV, 1887. New edit. (VERDUYN DEN BOER) 1929, p. 40.

Memorial " at Kirstenbosch. It is our sincere hope that the day may come when both countries, united in mutual appreciation, will commemorate CARL PETER THUNBERG, the illustrious Swedish scientist and *Father of Cape Botany*, by erecting a monument to him under the blue South African sky on the historical soil of Kirstenbosch, the site of the National Botanical Gardens. This would certainly be warmly welcomed not merely by his panegyrists, but by everyone who loves our wonderful Cape plants, so many of which are linked with the name of that outstanding Swedish botanist and collector.

ADDENDA ET CORRIGENDA.

To Carl Peter Thunberg I, Journ. of S. Afr. Botany, Vol. V, Part I, January, 1939 :

P.2—We may add here that his father JOHAN THUNBERG, who was a mine book-keeper and in addition to this carried on a small business, early expired and left his wife and children without means. Although later on things improved by the second marriage of his mother, MARGARETHA STARKMAN, with the merchant GABRIEL FORSBERG, young THUNBERG was still in a position not unusual for Sweden, where often witty and brilliant men had to struggle for life in their youth (Kongl. Vetensk. Acad. Handl. 1828).

Plate I, portrait of THUNBERG. The litho by CARDON was not made from the original painting by PER KRAFFT the younger, but from a copy of it which is now in the house of the students of " Smålands Nation " at Uppsala. The original painting was made in 1808, when THUNBERG was at the age of 65, and is a good likeness according to his biographer (C. A. AGARDH) in the Kongl. Vetensk. Acad. Handl. of 1828. It belongs to the University of Uppsala and is now in the Faculty of Medicine.

P. 3—read : " The capital Yeddo (the later Tokyo)", instead of " the then capital Yeddo ", which would suggest that Yeddo is not the capital of Japan any more, while it has only changed its name.

P. 5—read : " . . . . sent to THUNBERG when he was in Paris in order to complete his *medical* studies ", instead of " botanical " studies.

Pp. 5-6—By some oversight RUMPHIUS' Herbarium Amboinense and the " Flora of Ceylon " have been wrongly ascribed to N. L. BURMAN. His father JAN BURMAN was the author of both publications, which is also clearly shown by the dates of issue : the first work was published from 1741-1755, the latter (Thesaurus zeylanicus) in 1737.

While translating N. L. BURMAN's letter to THUNBERG of August 30, 1773, we have overlooked the little word " vix " (see footnote 2, third line from above) and in consequence of this our translation of the passage (p. 6) gives the opposite of BURMAN's meaning. As a matter of fact BURMAN wished to receive from THUNBERG living plants of those species which can *hardly* (vix) be propagated by seeds. The words " interque illas " (second line of footnote 2), which literally mean " among those," have been erroneously translated by " among other things," which may be replaced in this connection by " those." The passage in question when corrected reads as follows :

" You will greatly satisfy the Directors of the Hortus if you would send to the Hortus a box, filled with living plants, and would select those such as can hardly be propagated by seeds, like Geranium spinosum, flavum, etc."

P. 9—We may add here that the family records of the BURMANS have been taken from : " Notices historiques et généalogiques sur la Famille BURMAN," par J. G. BURMAN-BECKER. Copenhague, Imprimerie de E. C. Löser (without year).

One may find it of interest to know that there is a direct descendant of the BURMANS in the person of the distinguished Swiss scientist Dr. JAMES BURMANN, for which information we are indebted to Prof. Dr. TH. J. STOMPS, recently retired from his office as a professor of botany at Amsterdam University. Dr. BURMANN who lives at Geneva, is a man of great merits in the field of pharmacology and chemistry ; for his important research-work he is honoured at home and abroad. A worthy descendant of his famous ancestors !

P. 23—read : " BANKS *encouraged* the founding of the Linnean Society of London," instead of " was one of the founders." He may have kept himself aside because of his position as a president of the Royal Society.

To Carl Peter Thunberg II, Journ. of S. Afr. Botany, Vol. V, Part II, July, 1939 :

Plate 10, facsimile of CAROLUS LINNAEUS' handwriting, should face p. 89 instead of p. 94.

P. 92—We have been kindly informed by Dr. J. D. RUYS of Dedemsvaart, director of " Moerheim," the largest nursery of hardy perennials in Holland, that the estate " Ekebyhof " on a little island in lake Mälaren near Stockholm, owned at the time by the Royal Secretary ALBERT IHRE, BÄCK's son-in-law, is still inhabited by the IHRE family. Some time before the last world-war, being on a business-tour in Sweden, Dr.

Ruys visited the present owner of " Ekebyhof," cavalry captain Ihre, who has established a nursery on his estate.

P. 99—In the translation of Bengt Bergius' letter of December 18, 1781, to Thunberg, following slight alteration should be made : " He (Scheffer) seemed to be sincere in this, moreover he *agreed* that Linné was not useful at Upsala," instead of " was of the opinion " Linné etc. It seems that Bergius had uttered his opinion in this direction and that Scheffer then said that he thought he was right.

To Carl Peter Thunberg III (Travels), Journ. of S. Afr. Botany, Vol. V, Part III, October, 1939 :

On p. 106 mention is made of 3 plates, illustrating Vol. I of Thunberg's " Travels." Of the two plates inserted at the back of the volume, one represents the " *Marmota Africana*," called in this work the great white Cape mole. We lately examined a copy of the French edition, *Voyages de* C. P. Thunberg *au Japon, par le Cap de Bonne-Espérance, des îles de la Sonde*, etc. (translated by L. Langlès and revised by J. B. Lamarck as far as the scientific part is concerned). Vols. I-IV. Paris 1796. Vol. IV of this translation contains the same strange picture of the " Marmota Africana " (Hyrax capensis of Schreberg) which is far from resembling a mole, largely because of its distinct teeth which are those of a rodent. Prof. Lamarck observes in Vol. I, pp. 318-319, that this animal is a true marmot, as also thought by Thunberg who informs us about this animal that it preferably feeds on the corms of Gladiolus, Antholyza, Ixia and " Iris " (p. 320). According to Lamarck the correct scientific name of " la marmotte d'Afrique", as this rodent is called by him, is *Mus maritimus*, Gmel. (p. 319).

P. 110, footnote 48 about Sparrman—read : " Back in Sweden, he became a keeper of the natural history collections in the possession of the Academy of Science (1778-1798) and was appointed professor of natural history and pharmacology at *Stockholm* (not Uppsala !) in 1790. Although there did not exist any university at the time, a professorship was combined with the Board of Physicians."

P. 113—following record of Thunberg's excursion to Mount Paarl, in the company of Dr. Le Sueur, quoted from " Travels," Vol. I (1795), p. 122, should be inserted at the foot of the page : " The land in these parts was very poor, being merely loose sand, under which lay the solid rock, consisting of brown ferruginous clumps, composed of clay, vitriolic acid, and slate. In these meagre plains, nevertheless, *phylicas*, *ericas*, and *Proteas*, grew in abundance."

P. 118, footnote 64—read: Iris edulis, Thunb.=*Morea edulis*, (Thunb.) L.f. (according to N. E. Brown in Linnean Soc. Journ.—Botany, Vol. xlviii, April, 1928: " S. Afr. Iridaceae of Thunberg's Herbarium ").

P. 128—Between the first and second paragraph should be inserted: On the 14th of December (1772) Thunberg was at a farm near Slange River (Oudtshoorn Division), of which he writes: " Here we saw quickset hedges of *Aloe succotrina*."

P. 129, footnote 108 about " Fucus buccinalis "—read: " This plant, a very common sea-weed, and one of the larger thalloid forms, was later named *Ecklonia maxima*, (Osbeck) Papenf." (instead of Ecklonia buccinalis). It belongs to the Laminariaceae.

P. 130, footnote 117—read: *Tulbaghia alliacea*, L.f. (not L. !).

P. 132, footnote 123—read: Gladiolus recurvus, Thunb.=*Hesperantha recurva*, Ascherson et Graebner (according to N. E. Brown in Linn. Soc. Journ.—Botany, Vol. xlviii, 1928); the same page, footnote 125—read: Antholyza ringens, L.=*Babiana ringens*, (L.) Ker.

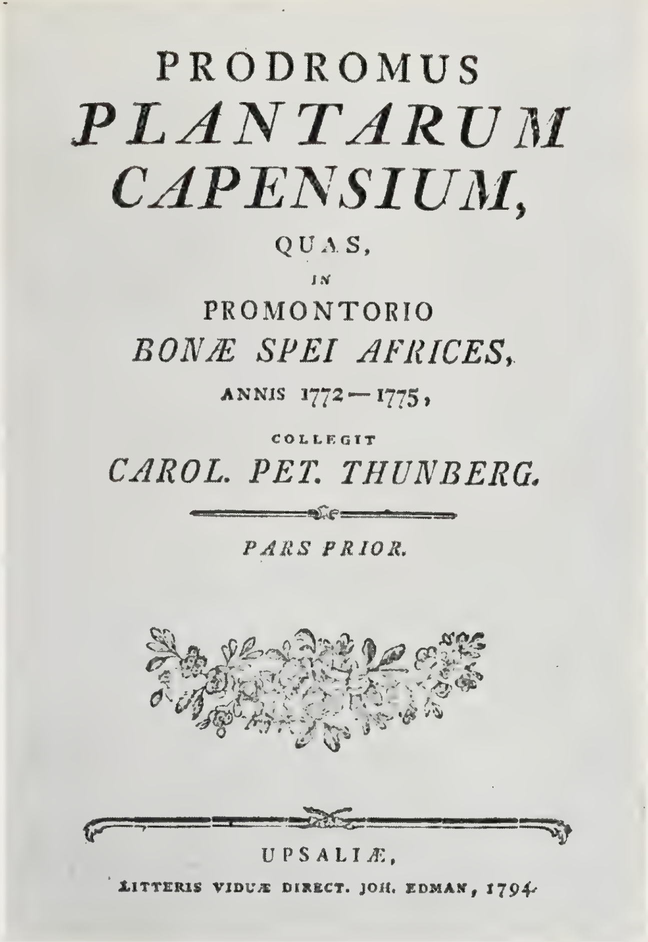
P. 133, footnote 133—read: Asclepias undulata, L.=*Xysmalobium undulatum*, (L.) R. Br.

P. 135—Alluding to the financial difficulties Thunberg had to cope with during his time at the Cape, he openly testifies in his preface to the "Flora Capensis ": "*Ingenue enim fateri non erubescam, pauperiorem Florum Amorem numquam peregrinasse, numquam ardentiori Zelo fuisse accensum* " (" Without a blush I frankly confess that there never can have been a more impecunious lover of flowers out on travels of exploration than I, yet never one more glowingly enthusiastic ").

P. 149—The species of *Aloe* Thunberg discovered when climbing Bokkeveld Mountain, was first described and named *A. dichotoma* by *Francis Masson*, not by Linnaeus *filius* as quoted here.

P. 151—insert at the head of the page, above *Roggeveld Mountains*, following note about the Lowermost Roggeveld, quoted from " Travels," Vol. II (1796), p. 168: " The whole country is destitute of wood, and has only a few small shrubs and bushes of the Mesembryanthemum, Pteronia, Stoebe kinds, and a few others, such as Othonnas, &c. The country produces good fodder for sheep and horses only, of which there are great numbers, but very little horned-cattle, on most of the farms." On the same page, footnote 191, read: Karré-hout, *Rhus viminale*, Ait.

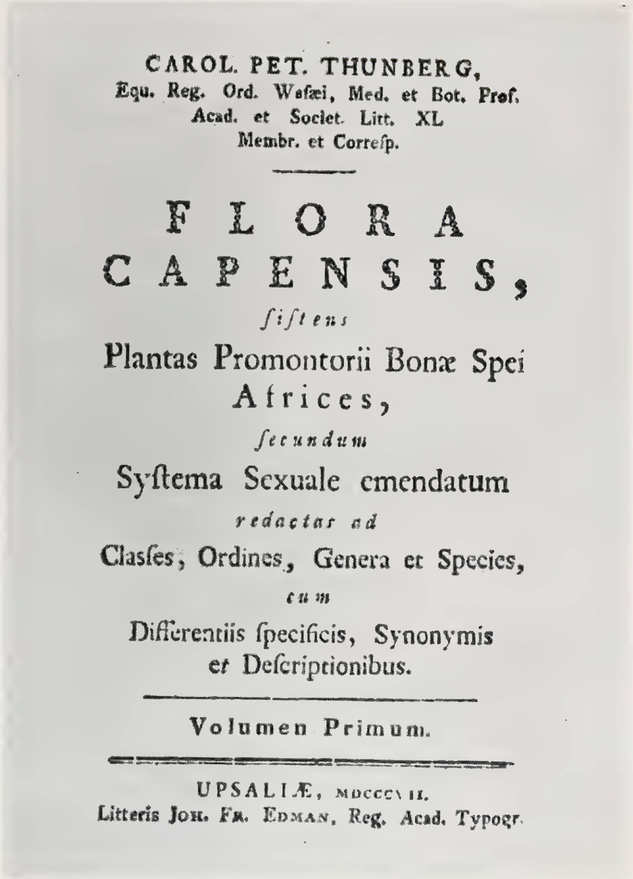
P. 154, footnote 195 and J. Dryander: He succeeded Solander as librarian of Sir Joseph Banks and of the Linnean Society. In order to avoid the impression that Solander had been the Society's librarian before—the Linnean Society having been founded only after his death—we ought to put in the words: " . . . . and *was also librarian* of the Linnean Society."



PRODROMUS
PLANTARUM
CAPENSIUM,
QUAS,
IN
PROMONTORIO
BONÆ SPEI AFRICES,
ANNIS 1772—1775,
COLLEGIT
CAROL. PET. THUNBERG.

PARS PRIOR.

UPSALIÆ,
LITTERIS VIDUÆ DIRECT. JOH. EDMAN, 1794.



CAROL. PET. THUNBERG,
Equ. Reg. Ord. Waſæi, Med. et Bot. Prof.
Acad. et Societ. Litt. XL
Membr. et Correſp.

FLORA
CAPENSIS,
ſiſtens
Plantas Promontorii Bonæ Spei
Africes,
ſecundum
Syſtema Sexuale emendatum
redactas ad
Claſſes, Ordines, Genera et Species,
cum
Differentiis ſpecificis, Synonymis
et Deſcriptionibus.

Volumen Primum.

UPSALIÆ, MDCCCVII.
Litteris JOH. FR. EDMAN, Reg. Acad. Typogr.

Title-page of C. P. THUNBERG,
Prodromus Plantarum Capensium.
Vol. I, Upsaliae, Litteris viduae Direct. Joh. Edman, 1794.

Title-page of C. P. THUNBERG,
Flora Capensis.
Vol. I, Upsaliae, 1807. Litteris Joh. Fr. Edman, Reg. Acad. Typogr.

Photographs taken of copies of these works in the Herbarium of the Royal Botanic Gardens, Kew, England.

PLATE VIII.